What is claimed is:

1. A method for fabricating a thin film transistor, comprising:

forming a first amorphous semiconductor film;

forming a material including a metal element to promote crystallization over the first amorphous semiconductor film;

forming a first crystalline semiconductor film by heating the first amorphous semiconductor film;

forming a second amorphous semiconductor film over the first crystalline semiconductor film;

heating the first crystalline semiconductor film and the second amorphous semiconductor film;

removing the second amorphous semiconductor film; and

wherein the second amorphous semiconductor film contains nitrogen concentration is 1×10^{18} atoms/cm^3 or lower, oxygen concentration is 8×10^{19} atoms/cm^3 or lower, and noble gas concentration is 1×10^{20} atoms/cm^3 or higher.

2. A method for fabricating a thin film transistor, comprising:

forming a first amorphous semiconductor film;

forming a material including a metal element to promote crystallization over the first amorphous semiconductor film;

forming a first crystalline semiconductor film by heating the first amorphous semiconductor film;

irradiating the first crystalline semiconductor film with a laser beam;

forming a second amorphous semiconductor film over the first crystalline semiconductor film;

heating the first crystalline semiconductor film and the second amorphous semiconductor film;

removing the second amorphous semiconductor film; and

wherein the amorphous semiconductor film contains nitrogen concentration is 1×10^{18} atoms/cm^3 or lower, oxygen concentration is 8×10^{19} atoms/cm^3 or lower, and noble gas concentration is 1×10^{20} atoms/cm^3 or higher.

3. A method for fabricating a thin film transistor, comprising:

forming a first amorphous semiconductor film;

forming a material including a metal element to promote crystallization over the first amorphous semiconductor film;

forming a first crystalline semiconductor film by heating the first amorphous semiconductor film;

forming a second amorphous semiconductor film over the first crystalline semiconductor film;

heating the first crystalline semiconductor film and the second amorphous semiconductor film;

removing the second amorphous semiconductor film; and

wherein the second amorphous semiconductor film contains nitrogen concentration is 1×10^{18} atoms/cm^3 or lower, oxygen concentration is 8×10^{19} atoms/cm^3 or lower, and noble gas concentration is 1×10^{20} atoms/cm^3 or higher.

4. A method for fabricating a thin film transistor, comprising:

forming a first amorphous semiconductor film;

forming a material including a metal element to promote crystallization over

the first amorphous semiconductor film;

forming a first crystalline semiconductor film by heating the first amorphous semiconductor film;

forming a second amorphous semiconductor film over the first crystalline semiconductor film;

moving the metal element into the second amorphous semiconductor film by heating the first crystalline semiconductor film and the second amorphous semiconductor film

removing the second amorphous semiconductor film; and

wherein the second amorphous semiconductor film contains nitrogen concentration is 1×10^{18} atoms/cm^3 or lower, oxygen concentration is 8×10^{19} atoms/cm^3 or lower, and noble gas concentration is 1×10^{20} atoms/cm^3 or higher.

5. A method for fabricating a thin film transistor, comprising:

forming a first amorphous semiconductor film;

forming a material including a metal element to promote crystallization over the first amorphous semiconductor film;

forming a first crystalline semiconductor film by heating the first amorphous semiconductor film;

forming a second amorphous semiconductor film over the first crystalline semiconductor film;

performing gettering by heating the first crystalline semiconductor film and the second amorphous semiconductor film;

removing the second amorphous semiconductor film; and

wherein the amorphous semiconductor film contains nitrogen concentration is

1×10^{18} atoms/cm^3 or lower, oxygen concentration is 8×10^{19} atoms/cm^3 or lower, and noble gas concentration is 1×10^{20} atoms/cm^3 or higher.

6. A method for fabricating a thin film transistor, comprising:

forming a first amorphous semiconductor film;

forming a material including a metal element to promote crystallization over the first amorphous semiconductor film;

forming a first crystalline semiconductor film by heating the first amorphous semiconductor film;

forming a barrier film over the first crystalline semiconductor film;

forming a second amorphous semiconductor film over the barrier film;

heating the first crystalline semiconductor film and the second amorphous semiconductor film;

removing the second amorphous semiconductor film and the barrier film; and

wherein the second amorphous semiconductor film contains nitrogen concentration is 1×10^{18} atoms/cm^3 or lower, oxygen concentration is 8×10^{19} atoms/cm^3 or lower, and noble gas concentration is 1×10^{20} atoms/cm^3 or higher.

7. A method for fabricating a thin film transistor according to Claim 6,

wherein the barrier film is an oxide film made by using ozone water or a mixed solution of hydrogen peroxide solution and sulfuric acid, hydrochloric acid or nitric acid.

8. A method for fabricating a thin film transistor according to claim 1,

wherein the second amorphous semiconductor film is formed by sputtering.

9. A method for fabricating a thin film transistor according to claim 2, wherein the second amorphous semiconductor film is formed by sputtering.

10. A method for fabricating a thin film transistor according to claim 3, wherein the second amorphous semiconductor film is formed by sputtering.

11. A method for fabricating a thin film transistor according to claim 4, wherein the second amorphous semiconductor film is formed by sputtering.

12. A method for fabricating a thin film transistor according to claim 5, wherein the second amorphous semiconductor film is formed by sputtering.

13. A method for fabricating a thin film transistor according to claim 6, wherein the second amorphous semiconductor film is formed by sputtering.

14. A method for fabricating a thin film transistor, comprising:

forming a first amorphous semiconductor film;

forming a material including a metal element to promote crystallization over the first amorphous semiconductor film;

forming a first crystalline semiconductor film by heating the first amorphous semiconductor film;

forming a second amorphous semiconductor film over the first crystalline semiconductor film;

heating the first crystalline semiconductor film and the second amorphous semiconductor film;

removing the second amorphous semiconductor film;

wherein the second amorphous semiconductor film is formed by sputtering in a state in which a flammable gas and a noble gas are supplied to a film formation chamber, oxygen concentration in the film formation chamber is reduced, and the supply of the flammable gas is stopped; and

wherein the second amorphous semiconductor film contains nitrogen concentration is 1×10^{18} atoms/cm^3 or lower, oxygen concentration is 8×10^{19} atoms/cm^3 or lower, and noble gas concentration is 1×10^{20} atoms/cm^3 or higher.

15. A method for fabricating a thin film transistor according to Claim 14, wherein the flammable gas is one element or more elements selected from a group consisting of SiH_4, Si_2H_6, SiH_2Cl_2, $SiHCl_3$, $SiCl_4$, GeH_4, PH_3, B_2H_6, AsH_3, and H_2Se.

16. A method for fabricating a thin film transistor, comprising:

forming a first amorphous semiconductor film;

forming a material including a metal element to promote crystallization over the first amorphous semiconductor film;

forming a first crystalline semiconductor film by heating the first amorphous semiconductor film;

forming a second amorphous semiconductor film over the first crystalline semiconductor film;

heating the first crystalline semiconductor film and the second amorphous semiconductor film;

removing the second amorphous semiconductor film

wherein the second amorphous semiconductor film is formed by sputtering in a

state in which a filament including Ti that is disposed in a film formation chamber is heated, oxygen concentration in the film formation chamber is reduced, and the heating of the filament is stopped; and

wherein the second amorphous semiconductor film contains nitrogen concentration is 1×10^{18} atoms/cm^3 or lower, oxygen concentration is 8×10^{19} atoms/cm^3 or lower, and noble gas concentration is 1×10^{20} atoms/cm^3 or higher.

17. A method for fabricating a thin film transistor, comprising:

forming a first amorphous semiconductor film;

forming a material including a metal element to promote crystallization over the first amorphous semiconductor film;

forming a first crystalline semiconductor film by heating the first amorphous semiconductor film;

forming a second amorphous semiconductor film over the first crystalline semiconductor film;

heating the first crystalline semiconductor film and the second amorphous semiconductor film;

removing the second amorphous semiconductor film;

wherein the second amorphous semiconductor film is formed by sputtering in a state in which a voltage is applied between electrodes including Ti disposed in a film formation chamber to generate a plasma, oxygen concentration in the film formation chamber is reduced, and applying the voltage between the electrodes is stopped; and

wherein the second amorphous semiconductor film contains nitrogen concentration is 1×10^{18} atoms/cm^3 or lower, oxygen concentration is 8×10^{19} atoms/cm^3 or lower, and noble gas concentration is 1×10^{20} atoms/cm^3 or higher.

18. A method for fabricating a thin film transistor according to claim 1, wherein the second amorphous semiconductor film is removed by dry etching using hydrazine or tetramethyl ammonium hydroxide.

19. A method for fabricating a thin film transistor according to claim 2, wherein the second amorphous semiconductor film is removed by dry etching using hydrazine or tetramethyl ammonium hydroxide.

20. A method for fabricating a thin film transistor according to claim 3, wherein the second amorphous semiconductor film is removed by dry etching using hydrazine or tetramethyl ammonium hydroxide.

21. A method for fabricating a thin film transistor according to claim 4, wherein the second amorphous semiconductor film is removed by dry etching using hydrazine or tetramethyl ammonium hydroxide.

22. A method for fabricating a thin film transistor according to claim 5, wherein the second amorphous semiconductor film is removed by dry etching using hydrazine or tetramethyl ammonium hydroxide.

23. A method for fabricating a thin film transistor according to claim 6, wherein the second amorphous semiconductor film is removed by dry etching using hydrazine or tetramethyl ammonium hydroxide.

24. A method for fabricating a thin film transistor according to claim 14,

wherein the second amorphous semiconductor film is removed by dry etching using hydrazine or tetramethyl ammonium hydroxide.

25. A method for fabricating a thin film transistor according to claim 16, wherein the second amorphous semiconductor film is removed by dry etching using hydrazine or tetramethyl ammonium hydroxide.

26. A method for fabricating a thin film transistor according to claim 17, wherein the second amorphous semiconductor film is removed by dry etching using hydrazine or tetramethyl ammonium hydroxide.

27. A method for fabricating a thin film transistor according to claim 1, wherein the noble gas element is one element or more elements selected from a group consisting of: helium (He), neon (Ne), argon (Ar), krypton (Kr), and xenon (Xe).

28. A method for fabricating a thin film transistor according to claim 2, wherein the noble gas element is one element or more elements selected from a group consisting of: helium (He), neon (Ne), argon (Ar), krypton (Kr), and xenon (Xe).

29. A method for fabricating a thin film transistor according to claim 3, wherein the noble gas element is one element or more elements selected from a group consisting of: helium (He), neon (Ne), argon (Ar), krypton (Kr), and xenon (Xe).

30. A method for fabricating a thin film transistor according to claim 4, wherein the noble gas element is one element or more elements selected from a group

consisting of: helium (He), neon (Ne), argon (Ar), krypton (Kr), and xenon (Xe).

31. A method for fabricating a thin film transistor according to claim 5, wherein the noble gas element is one element or more elements selected from a group consisting of: helium (He), neon (Ne), argon (Ar), krypton (Kr), and xenon (Xe).

32. A method for fabricating a thin film transistor according to claim 6, wherein the noble gas element is one element or more elements selected from a group consisting of: helium (He), neon (Ne), argon (Ar), krypton (Kr), and xenon (Xe).

33. A method for fabricating a thin film transistor according to claim 14, wherein the noble gas element is one element or more elements selected from a group consisting of: helium (He), neon (Ne), argon (Ar), krypton (Kr), and xenon (Xe).

34. A method for fabricating a thin film transistor according to claim 16, wherein the noble gas element is one element or more elements selected from a group consisting of: helium (He), neon (Ne), argon (Ar), krypton (Kr), and xenon (Xe).

35. A method for fabricating a thin film transistor according to claim 17, wherein the noble gas element is one element or more elements selected from a group consisting of: helium (He), neon (Ne), argon (Ar), krypton (Kr), and xenon (Xe).

36. A method for fabricating a thin film transistor according to claim 1, wherein the metal element is one element or more elements selected from a group consisting of iron (Fe), nickel (Ni), cobalt (Co), ruthenium (Ru), rhodium (Rh),

palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt), copper (Cu), and gold (Au).

37. A method for fabricating a thin film transistor according to claim 2, wherein the metal element is one element or more elements selected from a group consisting of iron (Fe), nickel (Ni), cobalt (Co), ruthenium (Ru), rhodium (Rh), palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt), copper (Cu), and gold (Au).

38. A method for fabricating a thin film transistor according to claim 3, wherein the metal element is one element or more elements selected from a group consisting of iron (Fe), nickel (Ni), cobalt (Co), ruthenium (Ru), rhodium (Rh), palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt), copper (Cu), and gold (Au).

39. A method for fabricating a thin film transistor according to claim 4, wherein the metal element is one element or more elements selected from a group consisting of iron (Fe), nickel (Ni), cobalt (Co), ruthenium (Ru), rhodium (Rh), palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt), copper (Cu), and gold (Au).

40. A method for fabricating a thin film transistor according to claim 5, wherein the metal element is one element or more elements selected from a group consisting of iron (Fe), nickel (Ni), cobalt (Co), ruthenium (Ru), rhodium (Rh), palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt), copper (Cu), and gold (Au).

41. A method for fabricating a thin film transistor according to claim 6, wherein the metal element is one element or more elements selected from a group consisting of iron (Fe), nickel (Ni), cobalt (Co), ruthenium (Ru), rhodium (Rh),

palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt), copper (Cu), and gold (Au).

42. A method for fabricating a thin film transistor according to claim 14, wherein the metal element is one element or more elements selected from a group consisting of iron (Fe), nickel (Ni), cobalt (Co), ruthenium (Ru), rhodium (Rh), palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt), copper (Cu), and gold (Au).

43. A method for fabricating a thin film transistor according to claim 16, wherein the metal element is one element or more elements selected from a group consisting of iron (Fe), nickel (Ni), cobalt (Co), ruthenium (Ru), rhodium (Rh), palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt), copper (Cu), and gold (Au).

44. A method for fabricating a thin film transistor according to claim 17, wherein the metal element is one element or more elements selected from a group consisting of iron (Fe), nickel (Ni), cobalt (Co), ruthenium (Ru), rhodium (Rh), palladium (Pd), osmium (Os), iridium (Ir), platinum (Pt), copper (Cu), and gold (Au).